

Landsat Data Continuity Mission: A Policy/User Perspective

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The Need for a Range of Current and Historic Geospatial Information Is Growing for:

- Mapping
 - Planning
 - Land management
 - Disaster response
 - Environmental monitoring
 - Intelligence
 - Science
 - Education
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Elements of Geospatial Information

- Geographic Information Systems (GIS)
- Satellite-based positioning
 - Global positioning system (GPS)
 - GLONASS
 - Europe's future Galileo
 - Differential GPS (DGPS)
- Remotely sensed data
 - Satellites
 - Aircraft
 - Balloons



Increasing Global Transparency—

- Globalization of satellite data supply, value-added services
 - Data and services more affordable
 - Increasing influence of commercial forces
 - Increasing ability to detect, analyze, monitor, activities in previously interdicted or inaccessible territory
 - Global media interest
 - For breaking news
 - For background images, context
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- Broad access to geospatial information



Enabling Policies, Laws

- Freedom from overflight restrictions (“open skies”)--codified in 1967 Outer Space Treaty and in the 1987 UN Principles on Remote Sensing
- Land Remote Sensing Policy Act of 1992
 - Clarified licensing provisions
 - Brought Landsat back into government operation
- In U.S., new capabilities enabled by 1994 U.S. policy on commercial remote sensing systems
 - Licenses now granted for 0.5 m resolution imaging



Enabling Market Forces— Infrastructure

- Market support from geographic information systems (GIS), visualization tools, Internet, computing power, information technologies
 - E-commerce
 - International proliferation of value-added companies serving wide variety of niche markets
 - Many new data sources, varied characteristics
 - New uses for data from current sensors
 - Competition with, support from, aircraft remote sensing
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Utility of Earth Observation Data is Growing

- Data archives increasing
- Landsat provides nearly global seasonal coverage
- Analytic/ Display Software is growing cheaper, more capable
- GIS software incorporates image processing; Image processing incorporates GIS
- Global Positioning System (GPS) Support
- Proliferation of digital terrain models
- Use of visualization software to interpret and display information



Applications Trends

- Value-added companies offer wide variety of new services
 - E.g., change detection, analysis, predictions
- Integration with GIS/GPS
 - GIS forms the backbone of many new applications
 - GPS supplies accurate geographic registration
- Integration with other digital spatial information
 - Census
 - Land use, zoning
 - Cadastral information
 - Video



Science Trends

- Ability to look at time series of Landsat, other data
 - Land Cover, Land Use Change
 - Human impact on environment
- Monitor processes, not just classify
- Examine large-scale, regional change
- New communities of science users (beyond the usual suspects), e.g.,
 - Archaeology
 - Biodiversity conservation
 - Public health



The Routine Availability of Landsat Data in Four Seasons and Open Data Policy Has:

- Made possible new applications
- Created new classes of users supporting public needs for better geospatial information
- Promoted data sharing
- Encouraged the development of regional data sets



Landsat Data Collection and Distribution Has Become a National *and* International Asset Supporting Public Needs

- Seasonal global coverage allows global monitoring
- Long term archives for change detection
- Affordable data
 - Science
 - Environmental management
 - Planning
- Open data policy



International Option for Data Collection and Delivery Should be Considered for Long Term Solution

- Proliferation of systems, value-added services
 - U.S. no longer dominates the technologies
- Strong remote sensing capabilities in U.S., rest of the world
- Why not encourage other countries to contribute to maintaining data supply?



Advantages of an International Consortium

- Reduces U.S. Government capital investment
 - Countries can cooperate at variety of levels (e.g., developing countries)
- Promotes international use of EO data
 - Europe's GMES
 - Good for U.S. value-added firms
- Increases robustness of the system:
 - Potential for multiple satellites; improved temporal coverage
 - Insurance against loss
- Promotes data exchange and preservation
- Enhances international ground station participation



Possible Barriers to an International Consortium

- Heritage of remote sensing in national security; burdensome U.S. export controls
- Reliance on partner funding, political institutions
- Need to develop consortium mechanism
- May compete with some private systems
 - But, no inherent barrier to the use of private data suppliers
- Proliferation of national systems
 - Entrenched national interests
 - Systems with different technical characteristics



Possible Cooperative Models

Each with Different Benefits and Drawbacks

- NPOESS
 - NOAA/DOD/EUMETSAT
- COSPAS/SARSAT
- TOPEX/Poseidon
- Public/private/international partnership
- Others (use your imagination!)



In Short—

- “The times they are a changin’”
- Time to rethink our approach
- What ever is done in the short term to maintain Landsat data continuity, the U.S. should look to ways to involve the international community more explicitly in developing a more robust, capable system to serve international needs for the long term.

